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**DEPARTMENT OF THE ARMY
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Manual
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**Engineering and Design
VERTICAL LIFT GATES**

- 1. Purpose.** The purpose of this manual is to provide guidance in the structural design of vertical lift gates.
- 2. Applicability.** This manual applies to all USACE Commands having responsibility for design of civil works projects.
- 3. Discussion.** Several types of vertical lift gates are used in a variety of hydraulic structures, including spillways, low-level inlets/outlets, powerhouses, and navigation locks. In recent years, there have been considerable problems with the performance of vertical lift gates. The majority of these problems have occurred as result of fatigue, causing fracture in main structural framing members of the gate. New criteria address methods to reduce fatigue and fracture through design and construction techniques. Research has proven that the serviceability of the gate can be improved by using proper material selection and fabrication techniques. These fabrication techniques include the use of proper joint detailing and welding procedures. Proper material selection and material compatibilities are essential parts of providing a long service life of the structure.
- 4. Distribution Statement.** Approved for public release, distribution is unlimited.

FOR THE COMMANDER:



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